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ENGINEERS FIND JOB FOR SUN IN HOLY LAND

A new engineering scheme which will use the sun's energy to provide electrical power for all Palestine, make water available for the irrigation of thousands of dry acres, and provide a new interior port for ocean shipping and canals for inland transportation, has been suggested by a French engineer, M. Pierre Gandillion, and accepted for execution by several French business men.

The project consists in utilizing the falls that can easily be created between the Mediterranean and the Dead Sea by carrying the water of the Mediterranean over a 260 foot ridge by means of canals, pumps, and a great siphon, and then letting it drop to the Valley of the Jordan and from there down into the Dead Sea, a total vertical distance of more than 1500 feet. The Dead Sea is an inland lake, and only as much water as the sun can easily evaporate will be thrown into it.

M. Gandillion estimates that the sun now evaporates all the water that the Jordan carries into the Dead Sea at the rate of about 92 cubic yards a second. That it used to evaporate much more is shown by a series of terraces at different levels on its borders, formed when the water was higher and the surface exposed to evaporation by the sun's heat therefore greater. The new plan will raise the level of the Dead Sea, and evaporation by the sun will take care of the additional and regulated inflow. It is believed that evaporation of 135 cubic yards a second is easily possible and the inflow from the Jordan is to be augmented by that amount.

The scheme will necessitate the building of a sea level canal from the port of Haiffa on the Gulf of Akka to a point about four miles inland. It will end in a great basin where ocean steamers can turn. From there on, either navigable canals with locks or ascensional water pipes will be built to reach the ridge at Afoule a way station. At that point a one-and-one-half mile tunnel will be bored through the rock and the water will run into chambers at about 262 feet above the level of the Mediterranean, and about 1125 feet perpendicularly above the Jordan, where a hydraulic turbine will be built. Another drop of 394 feet is available between the Jordan and the Dead Sea, making a total drop of over 1500 feet.

In all, a crude force of 617,000 horse power will be generated, said M. Gandillion. Of this, 190,500 horse power will be used to lift the 135 cubic yards of water a second from the Mediterranean over the 260 foot ridge, leaving enough power for the electrification of the entire Holy Land with its railroads, industries and agriculture.

The fresh waters of the Jordan andthe Sea of Galilee need not be poured into the Dead Sea along with the salt water of the Mediterranean, but can be diverted and used to irrigate thousands of acres of dry land.

WAKING UP THE DEAD SEA

By Dr. Edwin E. Slosson.
Director, Science Service, Washington

Among the many schemes for the development of Palestine one of the most original and ambitious is that for utilizing the Dead Sea as a source of water power.

This seems at first sight a startling suggestion. We are used to getting water power from mountain streams and lakes, but the Dead Sea is about 1300 feet below the ocean level to start with.

But on second thought we see that the scheme is not theoretically impossible for if we can get power from water running down to the ocean, we can likewise get power from water running down from the ocean - provided that we can find a lower place to put it in. Even if we could find a sink at low level in which to run the waste water there would have to be some pumping arrangement to lift out the water as fast as it runs in, and this would require more power than could be got out of the water wheel.

Now the Dead Sea forms just such a sink as is needed and an adequate pump was long ago installed by providence and is already in operation, being supplied with power by the central station of the solar system. The sun sucks up the river Jordan as rapidly as it runs in and the engineers calculate that if as much water as this or more were siphoned in from the Mediterranean, it would be continuously evaporated from the expanded surface of the Sea and the soaked sands of its shore. This is expected to provide over 600,000 horse-power for the electrification of the Holy Land.

The French Academy of Sciences, before which this scheme was presented, considered also the power possibilities of the other sub-sea sinks of the world, especially the Salton Sea, the Caspian Sea and certain sections of the Sahara.

The Salton Sea was formed or rather refilled, about twenty years ago by flooding from the Imperial irrigation canal and the Alamo and New rivers andit has been slowly drying up ever since. The surface is 206 feet below the Gulf of California. In 1917 its area was 300 square miles. It is, therefore, about as large as the Dead Sea but only a sixth as deep below sea-level. The evaporation rate at Salton Sea is about half that of the Dead Sea, so the total theoretical horse-power obtainable by running into the Salton Sea from the Gulf of California, ninety miles distant, all the water that can be evaporated away would not produce over 35,000 horse power. But it is useless to talk about the project anyhow for the Californians would lynch anyone who proposed to turn the Salton Sea into a salt sea permanently, when it could be better used as farming land. They are determined that no more water shall be run into their sink.

The idea of making a sea out of the Sahara was much discussed in the last century, not for purposes of power but to open up the heart of Africa to navigation, make a seaport out of Timbuctoo, and ameliorate the climate. It was argued that it was only necessary to cut through a narrow rim of north Africa and let in the waters of the Mediterranean, which would form there a second Mediterranean, surrounded by fertile shores and flourishing cities. The British protested that flooding the Sahara would divert the Gulf Stream into the Straits of Gilbralter and leave England as cold as Labrador.

But both the hopes and the fears vanished when someone took the trouble to look at a topographic map of Africa and observed that the average altitude of land proposed to be submerged was over a thousand feet. Only a very small portion of the Sahara is below sea level; certain salt marshes in southern Tunis and half a dozen oases in eastern Libya, and these were only from fifty to a hundred feet below the Mediterranean.

So the great project for the navigation of the Sahara collapsed and is now principally remembered because it afforded Ibsen a theme for one of Peer Gynt's chimerical schemes. This is his vision as a penniless castaway in Morocco:

"The sea's to the west; it lies piled up behind me,
Dammed out from the desert by a sloping ridge."

"Dammed out? It wants but a gap, a canal,-
Like a flood of life would the waters rush
In through the channel, and fill the desert!
Soon would the whole of yon red-hot grave
Spread forth, a breezy and rippling sea.
The oases would rise in the midst, like islands;
Atlas would tower in green cliffs on the north:
Sailing ships would, like stray birds on the wing,
Skim to the south, on the caravans' track."

"The southland, behind the Sahara's wall,
Would make a new seaboard for civilization.
Steam would set Timbuctoo's factories spinning;"

"Skirting a bay, on a shelving strand,
I'll build the chief city, Peeropolis.
The world is decrepit! Now comes the turn
of Gyntiana, my virgin land!"

PREHISTORIC MEN AND ELEPHANTS DISCOVERED TOGETHER IN FLORIDA

That prehistoric men lived in America at the same time as did the mammoths and mastodons, and that those now extinct elephants survived in the South 10,000 to 50,000 years later than in other parts of the continent, is indicated by remains discovered by a joint expedition of the Smithsonian Institution and Amherst College near the towns of Melbourne and Vero, Florida. These preliminary results of the expedition were tentatively announced by Dr. J. W. Gidley of the Smithsonian Institution, who has just returned to Washington from Florida. Dr. Gidley, in cooperation with Professor F. B. Loomis of Amherst, directed the excavations which revealed a crushed human skull, together with stone arrow heads, ten feet below the surface in close association with prehistoric animal remains.

Similar deposits were found in three different places near Melbourne and at Vero showing that the remains are typical of a wide extent of country. In the more recent accumulations of limestone shells, lying above the mammoth and human bones, were found fragments of pottery, while in the sand below the elephant layer were discovered the teeth of horses, camels, and saber tooth tigers typical of the pleistocene period of 50,000 or more years ago.

Dr. Gidley states that there is every evidence that the human remains were not buried in the mammoth strata at some more recent time, but that they were deposited during the same period and in a similar way to the animal bones.

The discovery of the existence of this distinct layer of ancient elephant and human relics not only shows that man was a contemporary of the mammoth on this continent as in Europe, but reveals for the first time that the big elephants probably survived for thousands of years later than has hitherto been thought. Dr. Gidley estimates that these American elephants lived in Florida perhaps 10,000 years after those whose remains were recently discovered in the former swamps of Indiana, and which have been assigned to the late pleistocene or Ice Age.

The crushed skull found at Melbourne will be pieced together in an effort to determine whether this human contemporary of the mastodon had the same type of head as modern Indians or whether he shows the characteristics of the more primitive cave man.

Exhaustive study of all the materialfound is now under way and a joint report will be made by Dr. Gidley and Professor Loomis.

One of the finds associated with the elephant and human bones has already been identified as being the remains of a Chlamytherium, a bigbodied, short-legged animal with overlapping scales like an armadillo, but with teeth similar to those of a [illegible] sloth.

Dr. Gidley and Professor Loomis also made excavations in a number of ancient shell-mounds representing the refuse from the feasts of prehistoric Indians. Between thirty and forty skulls were found in these mounds, including one strangely painted with a black pigment. Under the shoulder blade of another skeleton was found a coral arrowhead believed to have been the one which may have given this Indian his mortal wound.

GENERAL SMUTS PREDICTS NEW ICE AGE

General Jan Smuts, the former Boer leader in the field, who became a British general during the war and then Prime Minister of the Union of South Africa, predicted that Europe was drifting nearer and nearer to a new ice age, when addressing the South African Association for the Advancement of Science at Oudtshoorn.

He placed the advent of the new European ice age at a date approximately 10,000 years hence, though long before that the European climate would have altered beyond recognition by people living in our time. The African climate, he said, will also become gradually cooler, moist and rainy, with the consequence that the stretches of present wilderness will pass away. In all probability our present human races will have disappeared before this next phase and given place to a higher species of mankind, which will occupy the next age.

Enlarging on the fact that South Africa was 10,00 years behind the times as measured by European or American standards of culture, the soldier-statesman pointed out that its Bushmen were nothing but "living fossils, remains of a race which disappeared from Europe thousands of years ago."

Alluding to the skull of the ape-man recently discovered at Taungs, he said it showed the tremendous possibilities of South Africa as a field of research into the past of the human race. In botany,too, there were in South Africa true "living fossils" like the cycads. Certain biological problems could therefore be studied to better advatage in South Africa than in either Europe or America, and recent finds suggested at any rate the possibility that Africa would yet figure as one of the cradles of mankind.

INERT CHEMICAL ELEMENTS SHOW SOME SIGNS OF ACTIVITY

Three of the most unfriendly of all the elementary substances known to chemists, substances that have never been believed to have anything whatever to do with other chemical elements, not even with members of their own family, have now been persuaded to be a little sociable with the chemical compound water.

M. de Forcrand of the French Academy of Sciences has just announced that he has obtained the heretofore inert gas xenon in crystalline form combined with 6 or 7 molecules of water. It was made in a Cailletet apparatus when pure xenon in the presence of a little water was subjected to a pressure of several atmospheres. The crystalline form of krypton had been obtained by him two years before, and the first French scientist M. Villard discovered that of argon. But the xenon compound is the most stable of these.

Three of the six known "inert" gases still remain obdurate, and among these is helium, the non-inflammable balloon gas.

FEMALE SEX HORMONE CIRCULATES IN BLOOD

The female sex principle, recently discovered by Dr. Edgar Allen of Columbia, Mo., and J.P. Pratt of Detroit, has just been identified in the circulating blood of a number of animals by Dr. Robert T. Frank of the Research Laboratory of the National Jewish Hospital for Consumptives at Denver. Dr. Frank found that the secretions in the blood are much greater at periods of high sexual activity than at others, and it seemed that the blood or extract of it at such times might be used to induce normality in other animals and even human beings who are below normal. It was absent from the blood of males and of sexually subnormal females.

More cases of plague occurred in 1924 throughout the world than in any of the other five previous years, but this was largely due to the high prevalence in Northern India which is still the chief center of the disease.

Investigation has been begun by the U.S. Bureau of Fisheries to determine why mackerel are plentiful some years and scarce at others so that the abundance and size of the mackerel can be predicted in advance of the fishing season.

ANCIENT EGYPTIAN PLANTS BROUGHT TO CHICAGO

A collection of ancient Egyptian plants, some of which lived as far back as 2700 B.C., has been brought to America by Dr. James H. Breasted, director of the Oriental Institute of the University of Chicago, who has recently returned from Egypt.

The specimens were presented to the Institute by Dr. Ludwig Keimer, a German botanist. They were collected by Dr. George Schweinfurth, another German botanist, and the former teacher of Dr. Keimer. Dr. Schweinfurth, now ninety years old, has the remarkable record of over fifty consecutive seasons of active work in the ancient ruins of Egypt.

"The plants," says Dr. Allen, secretary of the Institute, "were collected from tombs and excavations all over Egypt, and owe their excellent state of preservation to the equable temperature and dryness of the atmosphere."

Some of the flowers in the collection still retain their natural colors. Dr. Schweinfurth also collected modern Egyptian representatives of the preserved specimens for comparison; and in the case of the delphiniums and poppies one can hardly detect a variation incolor between the ancient and modern specimens. In the Institute collection are blue lotus, date palm stalks, dephiniums, poppies, and pomegranates whose lives date back to 1100 B.C.; then there are peach and olive pits dating back to Byzantine times, about 500 A.D. The oldest plants in the collection are emmer chaff, 2700 B.C., and barley seed, 2000 B.C. The Egyptians seemed to relish garlic, for it too is represented.

DOCTOR CLAIMS MANY FORMS OF INSANITY CURABLE

That popular impressions about insanity are false and that the general run of patients attacked by mental disease do not always go from bad to worse was shown by Dr. Earl D. Bond of Philadelphia in an investigation he has made of the histories of more than 1000 admissions into the department for mental and nervous disease of the Pennsulvania Hospital. The patients had the more severe mental diseases such as senile and arterioschlerosis, manic-depressive psychoses, dementia praecox, general paralysis, and other common types of insanity. Of the 1024 patients whose histories Dr. Bond has followed for more than five years, 26.7 per cent. recovered and some of these reached higher levels of health than they had enjoyed before the illness, 14.5 per cent. improved, 32,3 per cent. died, and 25.5 per cent. failed to improve. He claims that patients who apparently recover do not as a rule soon break down again and physicians should be encouraged by his results.

Decks of playing cards dating from 1714 to 1765 and decorated with information on geography, natural history, and astronomy, were recently exhibited in London.

Many North American Indians ate their brave enemies either raw or cooked in the belief that they could in this way acquire their bravery.

GERMAN CANCER EXPERT DENIES CANCER GERM THEORY

Sanitary Councillor Dr. Ludwig M. Wolff, the well/known German cancer specialist and research worker, who is at present in Paris, according to a statement in an interview with the Paris correspondent of Science Service, has been left quite cold by newspaper reports on the English cancer discoveries and the German counter-claims to have made the same discoveries some time before.

On thispart of the controversy he refused to make any statement for publication beyond stating that it was an indubitable fact, whether the English workers knew it or not, that the results so sensationally trumpeted by the press had in fact been obtained in Germany some time before.

"But," he said," this is really of no importance at all, for, while these 'discoveries' have an undoubted scientific interest, they do not bring us an inch nearer the solution of the cancer problem.

"They aim at finding and isolating the cancer germ. That is to say, they aim at finding something which simply does not exist. There is no such thing as a cancer germ. There can be none. How do I know that? Very simply.

"Just think for a moment. We know many diseases that are caused by germs; tuberculosis, malaria, a whole series of affections of the skins, and so on. But these attack man at all ages. Bacilli take no account of age; they will attack an infant or a youth as readily as a mature or an old man. As you know, cancer is quite different; it never attacks anyone under the age of 30 and extremely seldom under the age of 40.

"What does this mean? It means first that the cause of cancer is not a bacillus, though it is, of course possible that the cancer condition encourages the propagation of a certain kind of bacillus, which would, however, be a sympton and not a cause of the disease. It means secondly that cancer is probably caused by some change, perhaps a chemical change, which the human body undergoes in the course of years.

"The last report of the Middlesex Hospital in London supports this view by recording the significant fact that cases of cancer there have been known to recover spontaneously. It is on this and similar facts that Prof. Barton Scammell, the president of the Radium Institute at Dover, England, bases his idea, for which there is a good deal to be said, that owing to certain defects in the diet and the preparation of modern food, the civilized human being of today suffers from lack of potassium in the body and that this is one of the factors, if not the main factor, in the occurrence of cancer. It is , of course, a well known fact thatthe primitive races do not suffer from cancer.

"The Dover idea of treatment involves the use of radio-phosphate of potash. This oxidizes the blood and prevents an excess of calcium, that usual phenomenon of middle age, just about the time when cancer begins to rear its head. The solutions of the radio-active alkali tend to clear out of the body the calcium accumulations.

"While the treatment and the avenue of research on which my own work and that of those with whom I am associated is based, starts from the same general conception as that of the Dover workers, we adopt somewhat different methods.

"The root idea of our work is this: Cancer in the first place is not a single, separate disease, but the generic name given to a series of diseases with a family resemblance and with a common origin. That origin is not a bacillus, but some alteration in the inner secretions. The way to fight it is therefore to restore these secretions to their normal state. Exhaustive tests have shown that a carefully regulated use of X-rays has the effect of stimulating the secretions in such a way that they recover their normal balance, and chemical composition.

"The use of X-rays for cancer is , of course, no new idea. Professor Wintz, of Erlangen, has practiced it for years. But his is an intensive use of the rays which, we found, tends to destroy the secretion glands rather than to restore them to their healthy texture and function.

"At the beginning of last week, the new X-ray Institute under the direction of Dr. Manfred Fraenkel, was inaugurated with the special end in view of making the closest study of the reaction of X-rays on cancer; this, by the way, is almost wholly a female institution, with women doctors who all have long special experience with women cancer patients, and especially cases in the breast and the abdomen.

"I think a great deal can be expected of this work. But let me lay the greatest possible emphasis on the fact that to cure cancer with X-rays, it is essential to administer the rays in extremely careful manner. The chemical changes in the blood produced by X-rays must be studied constantly during the treatment of a case, for that affords the only reliable test of the progress or value of the treatment. A special section of the Institute, the 'serological section' has been created for this particular purpose.

"Our experience has, I can state definitely, given us the most solid grounds for the conviction that it is on the lines of X-rayor of radium ray treatments that the cure of cancer, and even probably the prevention of cancer - which is perhaps even more important- is to be sought, and not in a sensational chase after bacilli that, at best, are only secondary manifestations of the disease."

WHAT THE HEAVENS OFFER IN SEPTEMBER

Pegasus Now in View

By James Stokley,
Science Service Staff Writer

With the coming of autumn, Pegasus, the Winged Horse, appears in the eastern evening sky as a conspicuous figure, and one that is easy to identify. At nine o'clock in the evening, if the sky is clear, look towards the eastern sky and about half way from the horizon to the zenith, you will see four stars forming a large square, which appears to rest on one corner. The northeastern star, Alpheratz, is really in the adjoining constellation of Andromeda, but the group of four form what is called the "Great Square in Pegasus". Diagonally across from Alpheratz is the brightest star in the constellation, Markab, known to the astronomers as alpha Pegasi.

The star nearest the zenith is Scheat, or beta Pegasi, and is of interest because it is one of the largest known stars in the heavens. Last year, with the aid of the great 100 inch telescope, the largest in the world, Prof. F. G. Pease,

of the Mt. Wilson Observatory in California, found that its diameter was 150,000,000 miles, nearly as large as the orbit of the earth. Gamma Pegasi, the lowest star of the square, has the name of Algenib.

To form the figure of Pegasus is not hard, and though, scientifically, these figures are no longer used, they are of historic interest. Pegasus dates from ancient times, the legend being that after Bellerophon conquered the Chimera with his aid, he attempted to fly to heaven. This presumption angered Jupiter, so he sent a gadfly to sting Pegasus, and Bellerophon fell off. Pegasus then continued his flight to heaven and was given a placeamong the constellations. Curiously enough, as seen from northern latitudes the figure is inverted, and only the front half of his body is shown. The head is formed by a row of stars running southwest from Markab, while the forelegs are made of two rows of three stars each running westwards from Scheat.

Cygnus, the Swan, is now descending into the western sky. This constellation includes, as its most conspicuous feature, the so-called "Northern Cross". The cross stands in an upright position. Deneb, or alpha Cygni, is the star nearest the zenith, while the one at the bottom of the upright of the cross is Albireo, or beta Cygni, Through a small telescope, Albireo is one of the most beautiful of stellar objects, as it is a colored double. That is, instead of being a single star, as it appears to the unaided eye, it really consists of two stars, very close together, which revolve around each other.

The brighter member of the pair is of the third magnitude and topaz colored, while the fainter is of the seventh and is blue. Double stars are common in the heavens, but not many show such striking color differences as this.

Directly below the cross is the constellation of Lyra, the Lyre, containing the bright star Vega, while south and slightly to the west is Aquila, the Eagle, in which Altair is the most conspicuous star. To the north, making an angle of about 45 degrees with the horizon, is the Great Dipper, now coming into a position that would enable it to hold water. The Pointers, at the end of the bowl farthest from the handle, point to the pole-star, Polaris. Inaa westerly direction, and nearly horizontal, lies the Little Dipper, with the pole-star, Polaris, at the end of the handle.

About half way between the Pole Star and the zenith is the inconspicuous constellation of Cepheus, the King of Ethiopia. To the east of him and more conspicuous (naturally) is his queen Cassiopeia, formed of stars forming a great M or W, depending on which way you look at it. She is seated on a chair, and it is not hard to see the resemblance of the group to that useful object, but a good deal of imagination is necessary to see the queen. As seen in the sky at present, she is in the rather unladylike attitude of standing on her head! According to the legend she was placed in this position on account of the jealousy of the sea-nymph because she boasted that her beauty was greater than theirs.

Jupiter is the most prominent planet in the sky in the evening. About nine o'clock it shines brilliantly in the southwest, in the constellation of Sagittarius Like all the planets, Jupiter moves among the stars in an easterly direction, but all summer it has been retrograding, moving apparently from east to west. This is because the orbit of Jupiter is outside that of the earth. As the earth moves much faster in its orbit than Jupiter does in his, we seem to leave it behind when both planets are on the same side of the sun. A similar effect is seen from an express train when it passes a slow freight, the slower train seems to be moving backwards.

On the ninth of September the earth is moving directly away from Jupiter, and then it seems to be stationary. After that the earth enters the part of its orbit on the side of the sun away from Jupiter, so then it will move eastwards among the stars. This motion will be very small all month, however, and it does no affect the daily motion of the planet across the sky from east to west, as a result of the earth's rotation on its axis. Saturn is low in the southwest, appearing as a second magnitude star.

Early in the evening, in the western twilight, appears the planet Venus, which is coming into a good position for viewing. Each night it will be seen a little higher in the sky, and will set a little later. This, in fact, will continue during the autumn, until November, so then it will be seen best. Mercury will not be seen in the evening this month, but about the eleventh will be at the greatest distance west of the sun, rising about an hour before sunrise, so that you will have to rise early (or stay up late) to see it.

With no eclipses, the sun has an easy month, but on the 23rd, at 8.44 A.M., Eastern Standard Time, it crosses the equator and enters the zodiacal sign of Libra. Then summer is officially ended and autumn commences.

EARTHQUAKE SOURCE TRACED TO KAMTCHATKA

The heavy earthquake reported from observatories at Chicago and other cities on August 19 occurred under the sea off the coast of northeastern Asia, according to calculations made by Commander H. N. Heck of the U. S. Coast and Geodetic Survey. Data were sent in by observatories of the Survey at Tucson, Ariz., and Cheltenham, Md., and by the Dominion Observatory at Ottawa, Canada.

The calculations showed that the epicenter, or point of greatest disturbance, of the quake was located at latitude 55 degrees north, longitude 165 degrees east, in the neighborhood of the Kamandorski islands, off the coast of Kamtchatka.

Commander Heck said, "In this region there is a tremendous undersea trough, 18,000 feet deep, which is a famous location for earthquakes. The most violent quakes in the world happen here, but they do little damage, for there is nothing to damage."

The earthquake reported on the same date from Porto Rico was an insignificant local affair, Commander Heck stated, and had nothing to do with the big quake of the north Pacific region.

On steep hills in Seattle, one edge of the sidewalk is provided with concrete cleats for winter walking.

Nearly 50,000 rainbow trout eggs were recently shipped from Montana to Honolulu and successfully transferred to Hawaiian streams for hatching.